Input, timing, and outcomes in a wider model of bilingualism

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Antonella Sorace

University of Edinburgh

Tsimpli's article opens an important perspective on the interaction between language-specific and domain-general factors and ultimately on the place of language within general cognition. I will briefly discuss two implications of this new perspective: first, there are convergences between different types of bilingualism with respect to the sensitivity to input and external factors, and second, qualitative aspects of input may have a larger role to play than assumed so far.

Bilingual language acquisition is remarkable because bilingual children are always exposed both to less input, compared to monolingual children, and to different input (e.g. from non-native speakers and/or from native speakers experiencing attrition effects). While phonological, lexical and grammatical acquisition is not identical in monolinguals and bilinguals (Byers-Heinlein and Werker, 2009; Sebastian Galles, 2010), many morphosyntactic aspects of grammar are acquired without significant delays whereas other aspects follow different paths or developmental timetables in monolinguals and bilinguals. As Tsimpli tells us, the crucial difference seems to be between, on the one hand, macroparametric 'core' properties and their associated microparametric options, which tend to be narrowly syntactic and not significantly affected by extra-grammatical factors, and, on the other hand, properties that 'interface' with non-linguistic components. Macroparametric phenomena tend to be acquired early by monolingual children, are sensitive to the effects of age of onset of bilingualism, and relatively insensitive to input quantity, although there may be timing differences between early and late successive bilinguals in the process of setting microparametric options. Interface properties, in contrast, are typically acquired late by both monolingual and bilingual children (see evidence on pronominal reference in Sorace et al., 2009), and are significantly affected by input but not by the timing of exposure to a second language.

The first point I wish to add is that the role of input may selectively affect syntax-discourse interface phenomena not only in child bilingual acquisition but also in other cases of bilingual development, such as native language (L1) attrition and adult second language (L2) acquisition. As discussed in Sorace (2005), attrition involves a drop in input exposure, due to the speaker's leaving their original language community. This reduction in input and interactions with native speakers implies that attrited speakers have fewer opportunities to engage in real-time mappings of grammatical options and pragmatic conditions and in the integration of extragrammatical factors. At the same time, attrited speakers are exposed to qualitatively different input produced either from other attrited L1 speakers or from L2 speakers, which causes priming and alignment and ultimately reinforces the changes introduced by attrition (Costa, Pickering and Sorace, 2008). In individual L1 attrition, as in early bilingualism, narrow syntactic aspects of grammar tend not to be affected (see Tsimpli et al., 2004 for examples). Interestingly, however, it appears that even narrow syntactic aspects may be sensitive to reduced input if attrition sets in at an earlier age, when syntactic representations are not consolidated (Flores, 2009, 2012). It is still an open question whether the selective changes in interface properties due to attrition involve grammatical representations or

are restricted to (modified) processing strategies and routines employed in accessing bilingual representations. A recent study by Chamorro, Sorace and Sturt (submitted) strongly suggests that only processing strategies are affected: these authors in fact found that very recent sustained exposure to monolingual input in native Spanish attrited speakers partially changes their preferences for antecedents in anaphora resolution back in the direction of monolingual preferences.

Similarly, it is interface phenomena that present residual optionality in advanced stages of adult L2 acquisition, rather than narrowly syntactic phenomena. In this case, as in L1 attrition, a still open question is whether it is quantity of input alone that determines the persistence of optionality, or rather the fact that L2 speakers' processing routines and executive functions change to accommodate a second language in ways that are not always optimal for structures that require rapid integration of contextual cues and efficient updating of the current production plan or interpretation (Sorace, 2011).

Once identified, the linguistic selectivity of the effects of input on bilingual language development, lead to the second issue. Tsimpli only considers the effects of differential quantities of input, but there are qualitative factors that play a role. The differential sensitivity of narrow and interface phenomena to qualitative differences in the input is still poorly understood. It would be important to know, both from a theoretical and from a more applied point of view, whether exposure to predominantly non-native input has any significant effects on language development across the board or only for interface phenomena, subject perhaps to modulating effects of the proficiency level of non-native speakers. All we have at the moment is some general indication that language development is affected by qualitative input differences (Place & Hoff 2011), but more focused studies may reveal that, depending of input quality, even macroparametric properties may not be fully acquirable in bilingual acquisition. Similarly, we do not know whether exposure to input produced by attrited speakers has differential effects on the bilingual child's competence. Given that non-native and attrited input are extremely common features of early bilingual acquisition, it is somewhat surprising that they have not been analyzed in the majority of studies.

Finally, Tsimpli remind us of the importance of placing studies within a formal linguistic perspective: this provides the tools for determining what belongs specifically to language and what belongs to cognitive domains outside language. However, the other important message from her paper is that interdisciplinary research on bilingualism is crucial both for an understanding of factors that lie outside the language domain and of how these factors interact with language in a comprehensive model of bilingual development across the lifespan.

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